

IN THE CLAIMS

1-9. Canceled.

1 10. (original) A method for recording and processing vibratory source seismic data,
2 the method comprising:

- 3 (a) generating a cascaded sweep sequence comprising N sweep segments
4 that are either concatenated or overlapping sequentially, where N is equal
5 to or greater than 2, said N sweep segments being substantially identical,
6 except that the initial phase angles of said N sweep segments are
7 progressively rotated by a constant phase increment of about $2 m \pi / N$
8 radians where m is an integer and $|m| > 1$;
9 (b) using said cascaded sweep sequence to drive a vibratory source thereby
10 propagating a seismic wave into the earth at a selected location;
11 (c) recording a groundforce signal associated with said seismic wave,
12 (d) recording at least one reflection signal from a location within the earth
13 responsive to said seismic wave, and
14 (e) using said recorded groundforce signal for processing the signal recorded
15 to produce a processed signal.

1 11. (original) The method of claim 10 wherein processing the signal recorded
2 comprises cross-correlating the recorded signal with a signal comprising said
3 groundforce signal and a first and a last sweep segment of said groundforce
4 signal.

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1 12. The method of claim 10, wherein said sweep segments further comprise a
2 sinusoidal wavetrain having a frequency that either increases monotonically with time or
3 decreases monotonically with time.

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1 13. The method of claim 12 wherein said increase or decrease of said frequency is
2 linear with time.

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1 14. The method of claim 10, wherein said sweep segments further comprise a psuedo-
2 random sweep series

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